

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problems Mailbox.**

PCT

EP 0031359

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ³: B01F 17/34; A23D 5/00; A23L 1/22	A1	(11) International Publication Number: WO 81/00061 (43) International Publication Date: 22 January 1981 (22.01.81)
(21) International Application Number: PCT/US80/00793 (22) International Filing Date: 26 June 1980 (26.06.80) (31) Priority Application Number: 052,459 (32) Priority Date: 27 June 1979 (27.06.79) (33) Priority Country: US (71) Applicant: SOUTHLAND CORPORATION [US/US]; 2828 North Haskell Avenue, Dallas, TX 75221 (US). (72) Inventor: JACKSON, Clifford, A.; 109 Larkwood Drive, Sanford, FL 32771 (US). (74) Agents: HOBBY, William, M. et al.; 400 West Colonial Drive, Post Office Box 3791, Orlando, FL 32802 (US).		(81) Designated States: AT (European patent), AU, BR, CH (European patent), DE (European patent), FR (Euro- pean patent), GB (European patent), JP, NL (Euro- pean patent), SE (European patent). Published <i>With international search report</i>
(54) Title: IMPROVED HYDRATED EMULSIFIER COMPOSITIONS AND THEIR METHOD OF PREPARATION (57) Abstract Unique powdered hydrated emulsifier, or surfactant compositions comprising, by weight, 2-15% water of hydration, emulsifier, at least about 0.1% shortening and/or about 0.1-30% flavoring agent. Virtually all of the common emulsifiers capable of hydrogen bonding are suitable for use in preparing the improved compositions of the present invention. The shortening used can be any of a number of the commonly available vegetable and animal shortenings, including marine oils, and is at least partially hydrogenated. Flavoring agents suitable for the compositions of this invention may be any of the normal natural or synthetic flavor additives commonly utilized in the food industry and suitable for human consumption. The invention further comprises improved methods for preparing the hydrated emulsifier compositions.		

IMPROVED PUBLICATION PUBLISHED

The first part of the book is devoted to a general introduction to the subject of international law. The second part is devoted to a detailed study of the various branches of international law, including public international law, private international law, and international criminal law. The third part is devoted to a study of the various international organizations, including the United Nations, the European Community, and the Organization for Security and Co-operation in Europe. The fourth part is devoted to a study of the various international treaties and conventions, including the Geneva Conventions, the Vienna Convention on the Law of the Sea, and the United Nations Convention on the Rights of the Child. The fifth part is devoted to a study of the various international disputes, including the dispute between Argentina and the United Kingdom over the Falkland Islands, the dispute between the United States and the Soviet Union over the Cuban Missile Crisis, and the dispute between the United States and the Soviet Union over the Vietnam War.

As seen from the above, the book is a comprehensive study of international law, covering all the major branches of the subject. It is written in a clear and concise style, and is suitable for use as a textbook or as a reference work. The book is divided into five parts, each dealing with a different aspect of international law. The first part is an introduction to the subject, the second part is a study of the various branches of international law, the third part is a study of the various international organizations, the fourth part is a study of the various international treaties and conventions, and the fifth part is a study of the various international disputes. The book is written in a clear and concise style, and is suitable for use as a textbook or as a reference work.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	KP	Democratic People's Republic of Korea
AU	Australia	LI	Liechtenstein
BR	Brazil	LU	Luxembourg
CF	Central African Republic	MC	Monaco
CG	Congo	MG	Madagascar
CH	Switzerland	MW	Malawi
CM	Cameroon	NL	Netherlands
DE	Germany, Federal Republic of	NO	Norway
DK	Denmark	RO	Romania
FI	Finland	SE	Sweden
FR	France	SN	Senegal
GA	Gabon	SU	Soviet Union
GB	United Kingdom	TD	Chad
HU	Hungary	TG	Togo
JP	Japan	US	United States of America

-1-

IMPROVED HYDRATED EMULSIFIER COMPOSITIONS AND
THEIR METHOD OF PREPARATIONBACKGROUND OF THE INVENTION5 Field of the Invention

The present invention relates to improved hydrated emulsifier compositions and their method of preparation. In addition to the powdered hydrated emulsifiers disclosed and claimed in my prior application referred to above, this application describes and claims new methods for preparing the powdered hydrated emulsifiers, hydrated emulsifier compositions including shortenings and/or flavoring agents, and methods for preparing the hydrated emulsifier compositions.

Description of the Prior Art

As set forth in my prior application, surface active agents (emulsifier) are commonly utilized in the food, cosmetic and industrial chemical industries for stabilizing and thereby enhancing the physical characteristics of various bakery products, cake icings, shortenings, whipped toppings, cosmetics, paints, and the like. While my prior invention was directed to minimal hydrates of emulsifiers and their method of preparation so as to yield powdered products exhibiting characteristics of functionality approaching those of the fully hydrated emulsifiers which were then commercially available, certain unsolved problems in the emulsifier arts remain. It is with specific regard to a more complete solution of these problems that the present application is directed.

For example, while my prior invention discloses and claims an economical and usable method for preparing powdered hydrated emulsifiers, I have now discovered new, alternative methods for their preparation. In addition, prior art literature as well as actual commercial usage of emulsifiers has recognized the desirability of providing and using stabilized shortenings containing surface active agents therein to produce what might be termed hydrated shortenings.

BUREAU
OMPI

-2-

In this regard attention is invited to U. S. Letters Patent No. 3,943,259 to Norris. Therein, a fluid shortening is disclosed including an emulsifier in a stabilized dispersion. In similar fashion U. S. Patent No. 3,993,580 to Galusky discloses a process for the continuous production of hydrated lipids in which the final product may have a fat plus emulsifier phase in its most stable crystalline form. Other prior art teachings of shortening-emulsifier compositions which are considered to be of interest include the following U. S. Letters Patent: 3,671,459; 3,782,970; 3,785,993; 3,889,004; 3,958,033; 3,966,632 and 3,995,069. However, none of these prior art teachings disclose or suggest either the preparation or use of powdered shortening-hydrated emulsifier compositions.

Relatively modern developments in the food and cosmetic industries have dealt with addition of flavoring agents to their products. For example, it is now quite common to add a butter flavoring to bread and cake products and to add, for example, fruit flavors to cosmetics such as lipsticks. Such flavoring agents are normally added as a discrete ingredient during the commercial manufacture of the end use product. Particularly with regard to bakery mixes intended for private, in-the-home, use, the addition of flavoring agents has proved to be extremely difficult if not virtually impossible. The difficulties are primarily associated with the normal volatility of the flavoring agents and the fact that they must be packaged separately from the dry mix. In fact, I am not aware of any prior art teaching whereby flavoring agents can be added in a dry, powdered or flaked, form to bakery mixes.

Accordingly, it is clear that there is a great need in the art not only for additional methods for preparing powdered hydrated emulsifiers, but also for improved hydrated emulsifier compositions containing shortenings and/or flavoring agents.



-3-

SUMMARY OF THE INVENTION

20 17
-3-0015 8
Desifidars The present invention relates to improved hydrated
082.86 emulsifier compositions of the type suitable for use in
-01-00 the food, cosmetic and industrial chemical industries
5 25 as well as their methods of preparation. Accordingly,
the present invention comprises a method for the forma-
-00-00 tion of what may be termed "minimal hydrates" of emulsi-
-00-00 fiers or surfactant compositions as well as such comp-
-00-00 ositions also including shortenings and/or flavoring
10 Agents. Insofar as the hydrated emulsifiers and their
-00-00 method of preparation, per se, are involved, my presently
-00-00 co-pending application referred to above is referred to
and its disclosure is incorporated herein by reference.

Further laboratory testing and experimentation has
15 revealed additional methods for preparing the hydrated
emulsifiers in addition to the spray chilling method
previously disclosed and claimed. More specifically,
it has been determined that flaked and powdered hydrated
emulsifiers can be prepared using a roller chiller or
20 a belt chiller process. The procedure is first to melt
the chosen emulsifier or mixture of emulsifiers and then
to add water to the heated emulsifier. This mixture is
then blended until a substantially uniform, gel-like
mixture is obtained. This mixture is then applied, as
25 by pouring, to either a roller chiller or a belt chiller.
A flaked hydrated emulsifier may then be removed from
the chiller.

In order to obtain a powdered final product, the
flaked emulsifier is next placed in a freezer for about
30 one hour and then ground in a blender to obtain the
powdered product. The free flowing powder resulting
from this process comprises the powdered hydrated emul-
sifier, the composition of which was described and claimed
in my prior application. Specific examples relating to
35 this new method of preparation are presented hereinafter.

At this point it should be noted that the application



-4-

of the water-emulsifier mixture to the chiller by pouring is but a preferred method for practicing the invention. Other methods of application to the chiller, such as, for example, spraying may also be utilized. In fact, it is believed that if the water-emulsifier is sprayed onto the chiller a powdered final product may be obtained without the necessity of grinding. Furthermore, it is to be understood that the flaked hydrated emulsifier may be ground into a powder without the necessity of first freezing the flakes.

Yet another aspect of the improved hydrated emulsifier compositions of this invention comprises powdered or flaked water dispersible shortening-hydrated emulsifier blends, and their method of preparation. As previously stated there is a great need for water dispersible shortening blends, and I have now been successful in applying minimal hydrate techniques to prepare shortening blends comprising shortening, emulsifier and water of hydration. The shortening used can be any of a number of the commonly available products such as, for example, soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow or marine oils. Since the final shortening-hydrated emulsifier blend is to be presented in a flaked or powdered form, the shortening should be at least partially hydrogenated so as to provide a sufficiently hard blend. While as little as about 0.1% shortening may be present in the final shortening-hydrated emulsifier blend, a preferred blend would contain a shortening to hydrated emulsifier ratio of about 7:3. It is, of course, to be understood that the ratio of shortening to hydrated emulsifier will vary dependent upon the lipophilic, hydrophilic characteristics of the chosen emulsifier. Accordingly, analysis of the shortening-hydrated emulsifier blends will reflect about 2-15% by weight water of hydration, at least about 0.1% by weight shortening, and emulsifier.

These shortening-hydrated emulsifier blends may be



-5-

prepared substantially in accord with the method described and claimed in my prior application and the new chiller method described herein. More specific examples concerning the composition of these blends, their method of preparation and their use are presented hereinafter.

Yet another improved hydrated emulsifier composition of these blends, their method of preparation and their use are presented hereinafter.

Yet another improved hydrated emulsifier composition of this invention comprises a flavored, hydrated emulsifier and its method of preparation. Briefly stated, these flavored, hydrated emulsifiers comprise flaked or powdered hydrated emulsifiers containing about 2-15% by weight water of hydration and about 0.1-30% by weight flavoring agent. Flavoring agents may be selected from any of the commercially available materials consisting of both natural and artificial flavors such as, for example, butter, butterscotch, chocolate, peppermint, orange, lemon, and others. While a specific example disclosing a preferred method for preparing the flavored, hydrated emulsifier is presented below, they may be prepared by spray chilling, roller chilling or belt chilling.

Finally, the improved hydrated emulsifier compositions of the present invention further comprise flavored, water dispersible, shortening-hydrated emulsifier blends and their method of preparation. These blends comprise a flaked or powdered hydrated emulsifier composition comprising about 2-15% by weight water of hydration, about 0.1-30% by weight flavoring agent, at least about 0.1% by weight shortening, and emulsifier. Specific examples of these flavored, water dispersible, shortening-hydrated emulsifier blends as well as their method of preparation are presented hereinafter, and they, too, may be prepared by spray chilling, roller chilling or belt chilling.

The invention accordingly comprises several steps



-6-

and the relation of one or more of such steps with respect to each of the others, and the compositions possessing the features, properties and the relation of constituents which are exemplified in the following detailed disclosure, and the scope of the invention will be indicated in the claims.

DETAILED DESCRIPTION

10 The present invention relates to improved hydrated emulsifier compositions and their method of preparation. Such compositions are commonly used in the food, cosmetic and industrial chemical industries. The following examples, then, are set forth in order to fully describe the compositions of the present invention and their methods of preparation.

EXAMPLE I

20 One mole of distilled monoglyceride, made from fully hydrogenated fatty acid glycerol esters, containing 90% alpha monoglyceride, was reacted with 1/2 mold of succinic anhydride. The mixture was heated with stirring until maximum formation of the succinic half ester had occurred. 25 Two moles of water were added. The blend became quite viscous and gel-like. When the mixture was uniformly blended, it was applied to a roller chiller. This produced an off-white flaked material which was then placed in a freezer for one hour. The frozen, flaked material was then ground in a Waring blender.

30 The hydrated emulsifier product obtained was a free-flowing white powder that passed through a standard twenty mesh screen. This product contained about 7% by weight water.

35 The hydrated emulsifier prepared in accord with this Example I dispersed readily in cold water.

Further examples of the hydrated emulsifier compo-



-7-

sitions were prepared in accord with the roller chilling method of Example I. The resulting powdered hydrated emulsifier compositions thus prepared are presented below. All composition constituents are listed in weight percents.

EXAMPLE II

Distilled Monoglycerides	85%
Ethoxylated Mono-diglycerides	3%
Water	12%

EXAMPLE III

Sodium Stearoyl 2 Lactylate	19%
Polyoxyethylene Sorbitan Ester	19%
Mono-diglycerides	57%
Water	5%

Powdered hydrated emulsifier compositions were also produced by flaking the material onto a belt chiller and subsequently grinding the flakes into a powder. The following Examples IV and V depict powdered hydrated emulsifier compositions prepared as generally set forth in Example I but utilizing a belt chiller.

EXAMPLE IV

Distilled Monoglyceride	88%
Ethoxylated Mono-diglycerides	3%
Water	9%

EXAMPLE V

Succinic half ester of glycerol monoesters	62.5%
Monoglyceride	31.5%
Water	6.0%



-8-

In each of the above examples, the blended material was applied to the chiller by pouring, but the method of this invention is not limited thereby. The material could be sprayed onto the chiller, and this could result in obtaining a powdered product without the necessity of grinding in a blender. It should also be noted that the flaked material may be ground to a powder without first having frozen them.

The following examples are set forth in order to fully describe the method and the composition of improved hydrated emulsifier compositions of this invention comprising powdered, water dispersible shortening-hydrated emulsifier blends.

EXAMPLE VI

A blend of twenty parts succinylated monoglyceride, ten parts distilled monoglyceride, forty-six and one half parts cottonseed flakes (Iodine value less than four), and twenty-three and one half parts soybean oil (Iodine value 135) was heated to about 80°C and mixed. Water was added to this blend, and the mixture was sprayed into a cooling chamber where the material went from a temperature of about 80°C to about 20°C. The product obtained was free-flowing light yellow powder containing about 7% by weight water.

The emulsification properties of the shortening-hydrated emulsifier blend was tested by placing forty grams of the product into 120 grams of 22°C. The minimum amount of mixing needed to wet the powder was used. The mixture was then observed with no further mixing. After approximately thirty minutes a noticeable swelling of the particles had occurred. After approximately one hour and thirty minutes the mixture was an emulsified paste.

Yet another example of the powdered, water dispersible shortening-hydrated emulsifier blend of the present inven-



-9-

tion was prepared in accord with the spray chilling method of Example VI. The resulting shortening-hydrated emulsifier blend composition is presented below. All composition constituents are listed in weight percents.

5

EXAMPLE VII

Cottonseed Flakes	46.5%
Soybean Oil	23.5%
Mono-diglycerides	15.0%
Propylene glycol monostearate	15.0%

10

These materials were heated to about 80°C and mixed. Water was added and the mixture was spray chilled, resulting in a final product containing about 6% water. The product obtained was a light yellow powder.

EXAMPLE VIII

15	Palm Oil	49.2%
	Cottonseed Flakes	36.3%
	Polyoxyethylene sorbitan monostearate	9.5%
	Water	5.0%

EXAMPLE IX

20	Hydrogenated Soybean Oil	86.5%
	Ethoxylated Mono-diglycerides	7.5%
	Water	6.0%

EXAMPLE X

	Hydrogenated Cottonseed Oil	79%
25	Sodium Stearoyl 2 Lactylate	14%
	Water	7%

The following example is given in order to illustrate a method of utilizing the powdered, water disper-



-10

sible shortening-hydrated emulsifier blend of this invention.

EXAMPLE XI

Commercial yellow layer cake was prepared using the
5 shortening-hydrated emulsifier blend of Example VII.
The cake mix was of the following composition:

	Shortening-hydrated emulsifier blend	25 parts
	Granulated sugar	602 parts
	Cake flour	550 parts
10	Milk powder	50 parts
	Whole egg solids	21 parts
	Egg white solids	9 parts
	Sale	9 parts
	Baking powder	35 parts
15	Water	546 parts

The test cake was of very good overall quality.

The following example is set forth in order to
fully describe a preferred composition for a flavored,
hydrated emulsifier of this invention and its method of
20 preparation.

EXAMPLE XII

Eighty-five parts monoglyceride was heated to about
75°C, and to this melt were added five parts butter
flavor, four parts polyglycerate 60 and six parts water.
25 When the resulting mixture was uniform it was applied by
pouring onto a belt chiller. This produced white flaked
material. The flaked material was placed in a freezer
for about one hour and was then ground. The final pro-
duct obtained was a free-flowing white powder that passed
30 through a standard thirty mesh screen.

The flavored, hydrated emulsifier composition wetted



-11-

readily in cold water.

5 The following examples are set forth in order to fully describe improved hydrated emulsifier compositions of the present invention comprising flavored, water dispersible, shortening-hydrated emulsifier blends and their methods of preparation.

EXAMPLE XIII

10 A flavored, water dispersible shortening-hydrated emulsifier blend was prepared from the following constituents:

Butterscotch flavor	5 parts
Polyoxyethylene Sorbitan Monostearate	5 parts
Cottonseed Oil (Hydrogenated)	85 parts
Water	5 parts

15 The butterscotch flavor, emulsifier and water were blended together at ambient temperature. The shortening was melted to about 80°C in a separate vessel. The two liquids were pumped to a single spray nozzle that sprayed into a cooling chamber. The atomized product rapidly
20 decreased in temperature from about 80°C to about 20°C. The product obtained was a free-flowing light yellow powder including about 5% water.

The emulsification properties of this flavored, water dispersible, shortening-hydrated emulsifier blend was
25 tested in accord with the procedures of Example VI. The powder particles swelled after about forty-five minutes and emulsified in two hours.

EXAMPLE XIV

30 Yet another flavored, water dispersible, shortening-hydrated emulsifier blend was prepared utilizing the following constituents:



-12-

Butter flavor	5 parts
Polyoxyethylene Sorbitan Monostearate	5 parts
Cottonseed Oil (Hydrogenated)	85 parts
Water	5 parts

5 All four constituents were blended together at about 70°C and then applied to a belt chiller. This produced a light yellow flaked material. The flaked material was placed in a freezer for one hour and then ground to a powder. The powdered product obtained was

10 a free-flowing off-white powder that passed through a standard thirty mesh screen. The product contained about 5% water and wetted readily in cold water.

Additional examples of flavored, water dispersible, shortening-hydrated emulsifier blends are presented

15 below.

EXAMPLE XV

Garlic Oil	.1 parts
Polyglycerate 60	14.9 parts
Cottonseed Oil (hydrogenated)	80 parts
20 Water	5 parts

EXAMPLE XVI

Butter flavor	30 parts
Polyglycerate 60	5 parts
Cottonseed Oil (hydrogenated)	58 parts
25 Water	7 parts

While the above examples have been presented with specific relation to products in the food industry, it is to be understood that the method and composition of the invention is not to be limited thereby. Both the

30 improved hydrated emulsifier compositions and their methods of preparation may be utilized in the production

-13-

of yeast raised baked goods, non-yeast raised baked goods, dairy products, creamers, cake icings, pudding, mayonnaise, cosmetics, paints and the like.

5 It will thus be seen that the object set forth above, among those made apparent from the preceding description are efficiently attained and since certain changes may be made in carrying out the above method and in the compositions set forth without departing from the scope of the invention, it is intended that all matter contained
10 in the above description shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all state-
15 ments of the scope of the invention which, as a matter of language might be said to fall therebetween.

Now that the invention has been described,

-14-

Claims

1. A method for the preparation of hydrated emulsifiers, said method comprising the steps of:

- a. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxyated condensates of monoglycerides, stearyl 2 lactylate and calcium and sodium salts thereof, alkoxyated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;
- b. heating said emulsifier until melted;
- c. adding water into said heated emulsifier;
- d. blending the water-emulsifier mixture;
- e. applying the blended mixture to a chiller; and
- f. removing said hydrated emulsifier containing about 2-15% by weight water of hydration from the chiller.

2. A method as in claim 1. further comprising freezing said hydrated emulsifier for about one hour and then grinding said frozen hydrated emulsifier to obtain a powdered hydrated emulsifier containing about 2-15% by weight water of hydration.

3. A method as in claim 1 further comprising grinding said hydrated emulsifier to obtain a powdered hydrated emulsifier containing about 2-15% by weight water of hydration.

4. A method as in claim 1 wherein said step of applying said blended mixture comprises pouring.

5. A method as in claim 1 wherein said step of applying said blended mixture comprises spraying.

30 6. A method as in claim 1 wherein said chiller
comprises a roller chiller.



-15

7. A method as in claim 1 wherein said chiller comprises a belt chiller.

8. A method for the preparation of powdered, water dispersible shortening-hydrated emulsifier blends, said method comprising the steps of:

a. selecting said shortening from the group consisting of at least partially hydrogenated vegetable and animal shortenings;

b. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxyated condensates of monoglycerides, stearoyl 2 lactylate and calcium and sodium salts thereof alkoxyated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

c. blending said shortening and said emulsifier together;

d. heating said blend to about 80°C;

e. adding water into said heated blend; and

f. spraying the water-blend mixture through a spray nozzle into a cooling chamber to obtain said powdered, water dispersible shortening-hydrated emulsifier blend containing about 2-15% by weight water of hydration and at least 0.1% by weight shortening.

9. A method as in claim 8 further comprising selecting said shortening from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow, and marine oil.

10. A method for the preparation of flavored, hydrated emulsifiers, said method comprising the steps of:

a. selecting said emulsifier from the group con-



-16-

sisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxylated condensates of mono-blycerides, stearoyl 2 lactylate and calcium and sodium salts thereof, alkoxylated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

- b. heating said emulsifier until melted;
- 10 c. adding a flavoring agent and water into said heated emulsifier;
- d. blending the flavor-water-emulsifier mixture;
- e. applying the blended mixture to a chiller; and
- f. removing said flavored, hydrated emulsifier
- 15 containing about 2-15% by weight water of hydration and about 0.1-30% by weight flavoring agent from the chiller.

11. A method as in claim 10 wherein said step of applying said blended mixture comprising spraying through a spray nozzle into a cooling chamber.

- 20 12. A method as in claim 10 wherein said chiller comprises a roller chiller.

13. A method as in claim 12 wherein said step of applying said blended mixture comprises pouring.

- 25 14. A method as in claim 13 further comprising freezing said flavored, hydrated emulsifier for about one hour and then grinding said frozen flavored, hydrated emulsifier to obtain a powdered, flavored, hydrated emulsifier.

- 30 15. A method as in claim 13 further comprising grinding said flavored, hydrated emulsifier to obtain a powdered, flavored, hydrated emulsifier.



-17-

16. A method as in claim 12 wherein said step of applying said blended mixture comprises spraying.

17. A method as in claim 10 wherein said chiller comprises a belt chiller.

5 18. A method as in claim 17 wherein said step of applying said blended mixture comprises pouring.

19. A method as in claim 17 wherein said step of applying said blended mixture comprises spraying.

10 20. A method for the preparation of flavored, water dispersible, shortening-hydrated emulsifier blends, said method comprising the steps of:

a. selecting said shortening from the group consisting of at least partially hydrogenated vegetable and animal shortenings;

15 b. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxylated condensates of monoglycerides, stearyl 2 lactylate and calcium and sodium salts thereof, alkoxylated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

20 c. blending said emulsifier, a flavoring agent and water together;

25 d. heating said shortening until melted;

e. pumping said heated shortening through a conduit;

f. injecting said emulsifier-flavor-water blend into the stream of said heated shortening; and

30 g. spraying the emulsifier-flavor-water shortening mixture through a spray nozzle into a cooling chamber to obtain said flavored, water dispersible, shortening-hydrated emulsifier blend containing about 2-15% by weight water of hydration, about 0.1-30% by weight flavoring



-18

5 agent and at least about 0.1% by weight shortening.

21. A method as in claim 20 further comprising selecting said shortening from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow, and marine oil.

10 22. A method for the preparation of flavored, water dispersible, shortening-hydrated emulsifier blends, said method comprising the steps of:

a. selecting said shortening from the group consisting of at least partially hydrogenated vegetable and animal shortenings;

15 b. selecting said emulsifier from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxyated condensates, stearyl 2 lactylate and calcium and sodium salts thereof, alkoxyated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers;

20 c. blending said shortening and said emulsifier together with the addition of a flavoring agents and water;

25 d. heating the emulsifier-flavor-water-shortening mixture;

e. applying the heated mixture to a chiller; and

f. removing said flavored, water dispersible, shortening-hydrated emulsifier containing about 2-15% by weight water of hydration, about 0.1-30% by weight flavoring agent and at least about 0.1% by weight shortening from the chiller.

23. A method as in claim 22 wherein said heating is sufficient to melt said mixture.

24. A method as in claim 22 wherein said heating is to about 70°C.



-19-

25. A method as in claim 22 further comprising selecting said shortening from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow, and marine oil.

5 26. A method as in claim 22 wherein said chiller comprises a belt chiller.

27. A method as in claim 26 wherein said step of applying said heated mixture comprises pouring.

10 28. A method as in claim 27 further comprising freezing said flavored, water dispersible, shortening-hydrated emulsifier for about one hour and then grinding said frozen material to obtain a powdered, flavored, water dispersible, shortening-hydrated emulsifier.

15 29. A method as in claim 26 wherein said step of applying said heated mixture comprises spraying.

30. A method as in claim 22 wherein said chiller comprises a roller chiller.

20 31. A water dispersible, shortening-hydrated emulsifier blend, said blend comprising: about 2-15% by weight water of hydration; at least about 0.1% by weight shortening selected from the group consisting of at least partially hydrogenated vegetable and animal shortenings; and emulsifier selected from the group consisting of fatty acid partial esters of polyhydric alcohols, half
25 esters of succinic acid of mono-acylated polyalcohol, alkoxylated condensates of monoglycerides, stearyl 2 lactylate and calcium and sodium salts thereof, alkoxylated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial
30 esters of polyhydric alcohols, and mixtures of said emulsifiers;



-20-

32. A water dispersible, shortening-hydrated emulsifier blend as in claim 31 wherein said shortening is selected from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow and marine oil.

33. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 7% water; about 63-70% cottonseed flakes and soybean oil in a ratio of about 2:1, and about 23-30% succinylated monoglyceride and distilled monoglyceride in a ratio of about 2:1.

34. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 6% water; about 63-70% cottonseed flakes and soybean oil in a ratio of about 2:1, and about 23-30% mono-diglycerides and propylene glycol mono stearate in a ratio of about 1:1.

35. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 5% water; about 49.2% palm oil; about 36.3% cottonseed flakes; and about 9.5% polyoxyethylene sorbitan monostearate.

36. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 6% water; about 86.5% hydrogenated soybean oil, and about 7.5% ethoxylated monodiglycerides.

37. A water dispersible, shortening-hydrated emulsifier blend as in claim 32 comprising, by weight, about 7% water; about 79% cottonseed oil; and about 14% sodium stearyl 2 lactylate.

38. A flavored, hydrated emulsifier composition,



-21-

said composition comprising: about 2-15% by weight water of hydration; about 0.1-30% by weight flavoring agent; and emulsifier selected from the group consisting of fatty acid partial esters of polyhydric alcohols, half
5 esters of succinic acid of a mono-acylated polyalcohol, alkoxylated condensates of monoglycerides, stearyl 2 lactylate and calcium and sodium salts thereof, alkoxylated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters
10 of polyhydric alcohols, and mixtures of said emulsifiers;

39. A flavored, hydrated emulsifier composition as in claim 38 comprising, by weight, about 6% water; about 5% butter flavor; about 4% polyglycerate; and about 85% monoglyceride.

15 40. A flavored, water dispersible, shortening-hydrated emulsifier blend, said blend comprising: about 2-15% by weight water of hydration; about 0.1-30% by weight flavoring agent; at least 0.1% shortening selected from the group consisting of at least partially hydro-
20 genated vegetable and animal shortenings; and emulsifiers selected from the group consisting of fatty acid partial esters of polyhydric alcohols, half esters of succinic acid of a mono-acylated polyalcohol, alkoxylated condensates of monoglycerides, stearyl 2 lactylate and calcium
25 and sodium salts thereof, alkoxylated fatty acid partial esters of polyhydric alcohols, diacetyl tartaric acid esters of fatty acid partial esters of polyhydric alcohols, and mixtures of said emulsifiers.

30 41. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 40 wherein said shortening is selected from the group consisting of soybean oil, corn oil, peanut oil, cottonseed oil, palm oil, coconut oil, lard, tallow and marine oil.



-22-

42. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 41 comprising, by weight, about 5% water; about 5% butter flavor, about 85% cottonseed oil; and about 5% polyoxyethylene sorbitan monostearate.

43. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 41 comprising, by weight, about 5% water; about .1% garlic oil, about 80% cottonseed oil; and about 14.9% polyglycerate 60.

44. A flavored, water dispersible, shortening-hydrated emulsifier blend as in claim 41 comprising, by weight, about 7% water; about 30% butter flavor; about 58% cottonseed oil; and about 5% polyglycerate 60.



INTERNATIONAL SEARCH REPORT

International Application No PCT/US80/00793

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC		
INT. CL. B01F 17/34; A23D 5/00; A23L 1/22		
U.S. CL. 426/533, 601, 607, 608, 611, 653, 654; 252/356		
II. FIELDS SEARCHED		
Minimum Documentation Searched *		
Classification System	Classification Symbols	
U.S.	426/601, 606, 608, 609, 611, 653, 654; 252/356 426/533, 607	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched *		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category *	Citation of Document, ¹⁵ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	US, A, 3,253,928, PUBLISHED 31 MAY 1966, BEDENK ET AL.	1-32, 38-42
X	US, A, 3,785,993, PUBLISHED 15 JANUARY 1974, LANGHANS.	1-32, 38-42
L	US, A, 3,973,053, PUBLISHED 03 AUGUST 1976, GALUSKY ET AL.	1-32
L	US, A, 3,995,069, PUBLISHED 30 NOVEMBER 1976, HARRIES.	26-32
A	US, A, 3,549,382, PUBLISHED 22 DECEMBER 1970, HANSEN.	1-19, 31, 32, 40, 41
A	US, A, 3,993,580, PUBLISHED 23 NOVEMBER 1976, GALUSKY.	1-44
A	US, A, 3,943,259, PUBLISHED 09 MARCH 1976, NORRIS.	1-44
A	US, A, 3,702,307, PUBLISHED 07 NOVEMBER 1972, NORRIS.	1-44
A	US, A, 3,671,459, PUBLISHED 20 JUNE 1972, NORRIS.	1-44
<p>* Special categories of cited documents: ¹⁹</p> <p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ²		Date of Mailing of this International Search Report ²
06 OCTOBER 1980		10 OCT 1980
International Searching Authority ¹		Signature of Authorized Officer ²⁰
ISA/US		Robert A. Yoncoskie ROBERT A. YONCOSKIE